

Talking Points on Natural History Collections for the 2023 Biological Sciences Congressional District Visits

This information is provided for your reference and to help you craft a clear and well-informed message. You do not need to repeat these points verbatim nor do you need to say all of the talking points; use those that are appropriate or comfortable for you and convey them in your own words.

Scientific collections are critical elements of our national research enterprise.

- Scientific collections, whether held at museums, government managed labs or archives, university science departments, field stations or botanic gardens, contain data (for example, genetic, tissue, species, image/recording, and environmental) that are a unique and irreplaceable foundation from which scientists study and explain past and present life on earth.
- The institutions and professionals who care for scientific collections enable scientists to conduct research that informs our understanding of life – current and historic – on earth, and to understand how life will be affected by changing environmental conditions – from the genetic and cellular level to the regional and continental scale. We are also able use what we learn about these species to identify new bio-based products – from pharmaceuticals to more productive crops.

Federal research programs provide essential funding support for biological research and natural history collections.

- Federal funding from the National Science Foundation (NSF), as well as other federal research agencies, is vitally important to supporting the research and education conducted at natural history collections.
- NSF provides about two-thirds of federal support for fundamental biological and environmental research conducted at colleges, universities, and non-profit research centers across the nation.
- NSF funds evolving work to digitize high priority specimen collections. The result of this effort is that irreplaceable biological specimens and their associated data are now accessible through the Internet to researchers, educators, and the public.
- NSF is an important supporter of national biological research infrastructure that houses natural history collections, such as living stock collections and field stations.
- NSF's Directorates for Biological Sciences (BIO), Geosciences (GEO), and Social and Behavioral and Economic sciences support research and student training opportunities in natural history collections.
- The Institute of Museum and Library Services (IMLS) provides grants to help museums with public outreach programs that strengthen the capacity of museums to improve the well-being of their communities. IMLS also conducts critical research, facilitates

state and regional collaboration, and supports national initiatives that benefit museums. Its Office of Museum Services awards grants to museums for preserving and digitizing collections, educational programming, professional development, and community outreach.

- *Speak about the federal program that funds your museum/collections.*

New investments in scientific collections are in our national interest.

- Scientific collections are a critical resource for advancing the knowledge needed to address current global challenges such as climate change, biodiversity loss, and pandemics. They allow us to predict threats to human health, find successful methods for ensuring food security, and address the impact of future environmental changes.
- Biological collections, their extended data, and the experts that build and study them are globally important for understanding where viruses such as SARS-CoV-2 exist in nature or when they cross from their current hosts to humans.
- A 2020 report by the National Academies of Science, Engineering and Medicine argued that collections are a critical part of our nation's science and innovation infrastructure and require stable, long-term funding to continue to be at the heart of scientific advances and education for the foreseeable future.
- A 2019 report by the Biodiversity Collections Network, "Extending US Biodiversity Collections to Promote Research and Education," called for the development of a digital network of extended specimen data that represents the depth and breadth of biodiversity collections. This Extended Specimen Network (ESN), which would include both the physical specimens and their associated genetic, phenotypic, and environmental data, will stimulate new research endeavors, particularly in areas where biology intersects with other fields and engages students and the public. The ESN enables scientific discovery that could potentially answer questions of national interest, such as how diseases are transmitted from animals to humans, how crops can be more effectively and efficiently grown in changing climates, and how we can sustain and use biological resources in our ocean. Long-term investments are required to support this important endeavor.

Museums strengthen our national economy.

- Museums provide core educational and outreach programs to engage the public, contribute more than \$50 billion to the U.S. economy every year, and support more than 726,000 American jobs.
- Economic activity generated by museums results in more than \$12 billion in tax revenue. A third of this revenue goes to state and local governments.
- Prior to the COVID-19 pandemic, each job created by the museum sector resulted in \$16,495 in additional revenue.
- Museums spend more than \$2 billion annually on education activities and receive 55 million visits from students in school groups every year. Children who visit museums

during kindergarten demonstrate higher achievement in reading, mathematics and science in third grade than children who did not.

Public investments in research yield positive returns.

- Since 1960, growth in U.S. employment in science and engineering has increased by an average rate of 4 percent per year, outpacing the 1 percent annual growth rate in total U.S. employment.
- Nearly 22 million U.S. jobs require science or engineering expertise at the bachelor's level.
- Workers in science and engineering occupations tend to have higher incomes and lower unemployment rates than workers in other kinds of jobs.
- In FY 2022, an estimated 352,000 people (researchers, postdoctoral fellows, trainees, teachers and students) were supported directly by NSF. More than 60,000 graduate students have been supported by NSF Graduate Research Fellowships since 1952.
- Federal research funding has given rise to numerous companies, such as Genentech, Ekso Bionics, Ginkgo BioWorks, and Google – to name just a few. Federal investments have also spawned entire new fields, such as genomics and its applications in forensics, agriculture, and medicine.
- *Include an example from your state.*

All scientific disciplines contribute to innovation and economic growth.

- Research is an interdisciplinary endeavor where tools from one field are borrowed by another, and insights from one discipline help guide research in another (e.g., neuroscience, psychology, artificial intelligence and systems biology).
- To enhance our global competitiveness, we need a strong foundation of basic research across all scientific disciplines.

Federal support for research has declined.

- Since 1976, federal investment in research and development (R&D) as a share of Gross Domestic Product has declined from 1.23 percent to 0.76 percent. Since 2010, federal R&D as a share of the U.S. economy decreased by nearly 25 percent.
- Meanwhile, other countries are increasing investments in science. China, India, and other countries in Asia are ramping up investments in R&D.

Sustained investment in research is required if we are to solve our greatest problems.

- Fluctuations in funding result in a backlog of unfunded but highly competitive research. This demoralizes researchers and slows the pace of discovery. Predictable annual investments allow federal research managers, scientists, and industry executives to plan wisely in setting research priorities.

Many of our nation's museums are still reeling from the impacts of the COVID-19 pandemic and need support.

- Natural history museums, botanical gardens, herbaria, field stations and other research institutions suffered revenue losses due to reducing, postponing, and canceling of public programs, including formal and informal science education programs. Most of these institutions are non-profits and operate with budgets with limited capacity to absorb revenue losses resulting from reduced public visitation.
- Boosting federal scientific investments would greatly benefit the U.S. research community, including natural history museums, botanical gardens, and other place-based research centers, that have suffered significant budget disruptions due to the pandemic.
- *Provide examples of how the pandemic has impacted your institution.*

We urge you to provide the National Science Foundation at least \$11.9 billion in Fiscal Year (FY) 2024.

- NSF funding is essential to our nation's research infrastructure, including natural history museums, biological field stations, and ecosystem research centers.
- This appropriations request aligns with the FY 2023 authorization for NSF in the CHIPS and Science Act and is supported broadly by the scientific community.
- Recognizing that the debt limit deal has provided a framework for non-defense discretionary funding levels for the next two years, we urge Congress to fund NSF at the highest possible amount building on the FY 2023 funding level of \$9.9 billion.

Please also provide robust funding increases for programs that support natural history collections within the Department of the Interior, the Smithsonian Institution, and IMLS.

Thank you for supporting scientific research.

- Thank you for providing \$9.9 billion to NSF in FY 2023, an increase of roughly \$1 billion, and ensuring budget increases for NIH, USGS, EPA, DOE Office of Science, and NOAA.
- We applaud the passage of the landmark CHIPS and Science Act, which demonstrated bipartisan commitment to our nation's scientific and technological enterprise. We urge Congress to follow through on its promise by funding NSF as close as possible to the levels authorized by the law.
- We urge you to support increased federal investments in scientific research and education. These increases are needed to strengthen America's capacity to innovate.